

Title (en)

Closed loop control of shifting clutch actuators in an automatic speed change transmission

Title (de)

Geschlossener Regelungskreis zur Ansteuerung von Kupplungen in einem Automatikgetriebe

Title (fr)

Système de régulation à rétroaction adaptative pour commander des actionneurs d'embrayage dans une transmission automatique

Publication

**EP 1433982 A2 20040630 (EN)**

Application

**EP 03028192 A 20031209**

Priority

US 32779202 A 20021223

Abstract (en)

A method of controlling hydraulic shift clutch actuators in an automatic speed change power transmission of the type having an electronic controller (TCU) for energizing a solenoid operated valve to control each hydraulic clutch actuator. A pressure sensor is disposed to sense the hydraulic pressure (P s ) to each clutch actuator and provides an electrical signal to the TCU which also receives a clutch pressure command signal (P c ) from the vehicle powertrain computer. The TCU computes the differential  $\#P = P c - P s$  and determines the valve energization current I E from known relationships between  $\#P$  and the percentage of maximum valve current and repeats the process in real time to adjust I E until  $\#P$  is negligible.

IPC 1-7

**F16H 61/02**

IPC 8 full level

**F16D 48/02** (2006.01); **F16H 61/02** (2006.01); **B60W 10/18** (2006.01); **F16H 57/04** (2010.01); **F16H 61/00** (2006.01); **F16H 61/06** (2006.01); **F16H 61/30** (2006.01); **F16H 59/68** (2006.01); **F16H 61/68** (2006.01)

CPC (source: EP KR US)

**B60T 13/46** (2013.01 - KR); **B60W 10/18** (2013.01 - KR); **B60W 40/12** (2013.01 - KR); **F16H 57/04** (2013.01 - EP US); **F16H 61/0206** (2013.01 - EP US); **F16H 61/0251** (2013.01 - EP US); **F16H 59/68** (2013.01 - EP US); **F16H 2059/683** (2013.01 - EP US); **F16H 2061/0078** (2013.01 - EP US); **F16H 2061/0087** (2013.01 - EP US); **F16H 2061/0209** (2013.01 - EP US); **F16H 2306/00** (2013.01 - EP US); **F16H 2342/10** (2013.01 - EP US)

Citation (applicant)

- US 4781080 A 19881101 - IWATSUKI KUNIHIRO [JP]
- US 4776233 A 19881011 - KITA YASUO [JP], et al

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EP2336605A3; CN102047009A; FR3004686A1; EP1722133A3; US8989971B2; WO2009147490A1; WO2014174181A1

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AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

Designated extension state (EPC)

AL LT LV MK

DOCDB simple family (publication)

**EP 1433982 A2 20040630**; **EP 1433982 A3 20070411**; **EP 1433982 B1 20090415**; AT E428876 T1 20090515; CA 2453461 A1 20040623; CA 2453461 C 20080715; DE 60327155 D1 20090528; JP 2004205044 A 20040722; KR 20040056375 A 20040630; US 2004122577 A1 20040624; US 6807472 B2 20041019

DOCDB simple family (application)

**EP 03028192 A 20031209**; AT 03028192 T 20031209; CA 2453461 A 20031217; DE 60327155 T 20031209; JP 2003427870 A 20031224; KR 20030094505 A 20031222; US 32779202 A 20021223